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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/599,000	DAVIS, ARLIN R.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *28 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Amendment

1. Applicant's arguments filed on 1/28/2004 regarding claims 1-33 have been considered.

Drawings

2. Acknowledgement is made of the amended drawings received on 1/28/2004. However, a new ground of rejection is made in view of the missing prior art labels in Figures 1A and 1B.

Specification

3. Acknowledgement is made of amended specifications received on 1/28/2004, which has corrected the defective items in the previous office action. The objection to the specification is now withdrawn.

Claim Rejections - 35 USC § 112

4. Claims 6, 24, 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 6, the recitation of the limitation "mapping a first physical address of a remote node to a second physical address of the remote node," contradicts with the subsequent limitation "second physical address is embedded within the first physical address." It is noted by the Examiner that when a first physical address maps to second physical address, the first physical address is converted from one address format to another address format by way of a

conversion means and/or a protocol. After the mapping/conversion is performed, the first physical address would become the second physical address that the second physical address could not possibly be embedded with the first physical address. Therefore, the recitation of the aforementioned limitations in the claim renders the claim indefinite.

Regarding claim 24, which depends from claim 21, the recitation of the limitation "the local physical address of each node is embedded within the legacy or global physical address of the node," in claim 24 contradicts with the limitation "obtaining a legacy or global physical address for the first node based on the local physical address of the first node" in claim 21. Therefore, the recitation of these two contradicting limitations claims 21, 24 above renders claim 24 indefinite by the same reasoning of rejection set forth in claim 6 above.

Regarding claim 32, which depends from claim 31, the recitation of the limitation "the local physical address is embedded in the global physical address of the second node" in claim 32 contradicts with the limitation "mapping the global physical address of the second node to a local physical address of the second node" in claim 31. Therefore, the recitation of these two contradicting limitations claims 31, 32 above renders claim 32 indefinite by the same reasoning of rejection set forth in claim 6 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claim 1-20, 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Data and Computer Communications, Fifth Edition, William Stallings, 1997, in view of Ikeda (US Patent 6,711,167).

Regarding claims 1, 6, 10-11, 16-20, 27, Stallings discloses an apparatus at an ATM host (**local host**) comprising a LAN emulation module (**an emulation driver**, see 490, Figure 14.14) coupled to AAL5 (**channel adapter** comprising AAL5, ATM, and Physical Layer, see 490, Figure 14.14). While the LAN emulation module converts MAC frames (**legacy physical address**, see 490, lines 3-8) to ATM cells, AAL5 segments MAC frames (**local physical address**, see 490, lines 3-8) into a plurality of ATM cells (**a virtual interface**) wherein each ATM cell contains virtual channel identifiers (**channel adapter mapping local physical address of the remote node,** ATM-to-LAN converter**, to a VI channel**, see on 490, Figure 14.14). In addition, Stallings discloses AAL5 (**channel adapter**) is coupled to some memory buffers so as to allocate memory to each ATM cell. Stallings further discloses the channel adapter (channel adapter comprises AAL5, ATM, and Physical Layer, see page 490, Figure 14.14) at the local node interfaces the ATM host with the ATM switch via the physical layer (**channel adapter to interface the host to a switch fabric,** see 490, Figure 14.14).

Stalling does not specifically disclose a virtual interface VI work queue. However, Ikeda discloses an ATM apparatus in which a cell buffer is used for temporarily holding data of a received IP packet, and is used by a sending/receiving controller for generating an ATM cell after referring to a VC table (see lines 47-48, 53-57, col. 12). Ikeda further discloses a VC table is holding data indicating the relation between an IP address and VCI/VPI of ATM cells (descriptors about VI work queue, see lines 49-52, col. 12). As a result, a VC table and a cell buffer are indeed formed between the IP layer and the ATM layer as storage means to hold memory address information for each virtual channel. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the cell buffer and the VC table with the LAN emulation apparatus of Stallings such as the use of the VC table and the cell buffer between the IP layer and the ATM later, as taught by Ikeda. The motivation to do so is to temporarily hold data of a received IP packet because a sending/receiving controller would be used to generate an ATM cell by using the data of the received IP packet held in the cell buffer and by referring to the VC table for the relationship between IP destination address and VCI/VPI of ATM cells for the benefit of establishing virtual channel communication between network nodes over ATM LAN.

Regarding claims 2-4, 7-9, Stallings discloses an ATM-to-LAN converter (**a remote node**, see 490, Figure 14.14) comprises an ATM layer (**local physical address**, see 490, lines 3-8), which is provided with a MAC layer (**legacy physical address**, see 490, lines 3-8). In addition, Stallings discloses an Ethernet frame can be used as the MAC frame (see Ethernet or Token Ring host, IEEE 802.3 Ethernet MAC address on 490, Figure 14.14).

Regarding claim 5, a TCP/IP protocol stack (**legacy protocol stack**, see 490, Figure 14.14) is coupled to LAN emulation module (**emulation driver**, see 490, Figure 14.14). In addition, it is well known that an ARP protocol, a low level protocol within TCP/IP, is used to obtain the MAC address from a known IP address. First, an ARP request with the IP address is broadcast onto the network. Second, the node on which the IP address (**network address**) resides responds with the MAC address (**legacy physical address**) of the node (**mapping a network address to a legacy physical address**).

Regarding claims 12-13, Stallings discloses a physical layer, a component of a channel adapter at the host node, interfaces with an ATM switch. It is inherent the physical layer typically comprises a NIC interface (**channel adapter comprises an ATM NIC for interfacing to an ATM network**).

Claim 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Data and Computer Communications, Fifth Edition, William Stallings, 1997, in view of Ikeda and in further view of Gai et al. (US Patent 6,697,360).

Regarding claims 14-15, Stallings discloses a LAN emulation module converts MAC frames (**first physical address**, see 490, lines 3-8) to ATM cells (**second physical address**, **determine a first physical address to second physical address**, see 490, lines 3-8) without use of a specialized protocol.

Stallings does not explicitly show a protocol to convert IP address (network address) to MAC address (physical address). However, Gai discloses an ARP protocol (**it is noted that an ARP protocol, as admitted in claims 14 and 15, is not a specialized protocol**), a low level protocol within TCP/IP, is used to obtain the MAC address (**physical address**) from a known IP

address (**network address**). First, an ARP request with the IP address is broadcast onto the network. Second, the node on which the IP address resides responds with the MAC address of the node.

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the use of ARP protocol with the LAN emulation apparatus of Stallings such that a MAC address would be identified from a network IP address such as the ARP protocol taught by Ikeda. The motivation to do so is for a network node to learn an MAC address from an IP address because the MAC address returned would be used by the IP layer when handing a communication message packet down for further processing by the data link layer.

6. **Claims 21-26, 28-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stallings in view of Gai (US Patent 6,697,360).

Regarding claims 21-24, Stallings discloses an apparatus at an ATM host (**first node,** see 490, Figure 14.14) comprising a LAN emulation module coupled to AAL5 (ATM Adaptation Layer). The LAN emulation module in the first node converts MAC frames (**global physical address**, see 490, lines 3-8) to and from ATM (**local physical address**, see 490, lines 3-8) cells (**obtaining a local physical address for a first node and obtaining a local physical address for other node, obtaining a legacy or global physical address for the first node**), AAL5 segments MAC frames into a plurality of ATM (**local physical address**) cells wherein each ATM cell contains virtual channel identifiers (**establishing a connection-oriented VI channel between first node and each of the one or more nodes**). It is well known in the art that a RARP (Reverse Address Resolution Protocol) protocol, a low level protocol within TCP/IP, is

used to obtain the IP address (**network address**) from a known MAC address. First, an RARP request with the MAC address is broadcast onto the network. Second, the node on which the MAC address resides responds with the IP address of the node (**using a legacy protocol to broadcast a request message to obtain a network address of the first node**). The teaching of this well known RARP protocol is strongly supported by the fact that Gai discloses RARP protocol is often used by an entity to learn its own IP address by broadcasting a RARP request message containing its own MAC address (see lines 25-32, col. 3).

Regarding claim 27, Stallings discloses an apparatus at an ATM host (**first node,** see 490, Figure 14.14) comprising AAL5 (ATM Adaptation Layer, see 490, Figure 14.14). AAL5 segments MAC frames into a plurality of ATM cells wherein each ATM cell contains virtual channel identifiers (**establishing a VI channel between first node and each of a plurality of other nodes,** ATM-to-LAN converters, see 490, Figure 14.14). Also, it is well known that an ARP (Address Resolution Protocol) protocol, a low level protocol within TCP/IP, is used to obtain the MAC address (**global physical address**) from a known IP (**network address**) address (**using a legacy protocol to broadcast a request message over VI channels including network address**). An ARP request with the IP address is broadcast onto the network. The node on which the IP address resides responds with the MAC address of the node (**receiving a response message including the global physical address**). Stallings discloses a LAN emulation module converts ATM cells (**local physical address**) to MAC frames (**legacy physical address**) without use of a specialized protocol.

Regarding claims 25-26, 28-29, Stallings discloses MAC frames can be transmitted over a virtual channel in multicast (**many-to-many work queue bindings between the first node**

and the one or more other nodes in the network, see 490, lines 3-8) and unicast (**one-to-many work queue bindings between the first node and the one or more other nodes in the network**, see 490, lines 3-8).

Regarding claim 30, Stallings discloses an ATM-to-LAN converter (**a remote node**, see 490, Figure 14.14) comprises an ATM layer (**local physical address**, see 490, lines 3-8), which is provided with a MAC layer (**legacy physical address**, see 490, lines 3-8).

Regarding claim 31, Stallings discloses an apparatus at an ATM host (**first node**, see 490, Figure 14.14) comprising AAL5 (ATM Adaptation Layer). AAL5 segments MAC frames (**local physical address**, see 490, lines 3-8) into a plurality of ATM cells wherein each ATM cell contains virtual channel identifiers (**establishing a VI channel between first node and each of a plurality of other nodes**, ATM-to-LAN converters, see 490, Figure 14.14). Stallings discloses an apparatus at an ATM-to-LAN Converter (**second node**, see 490, Figure 14.14) comprising a LAN emulation module coupled to AAL5. While the LAN emulation module in the second node converts MAC frames to ATM cells (**mapping global physical address of the second node to a local physical address of the second node**, see 490, lines 3-8), AAL5 segments MAC frames into a plurality of ATM cells wherein each ATM cell contains virtual channel identifiers (**mapping local physical address of the second node**, ATM-LAN converter, **to VI channel**, see 490, Figure 14.14). It is also inherent that a communication message would be sent from the first node to the second node over the established VI channel (**sending the message to the second node over the established channel**).

Regarding claim 32, Stallings discloses ATM layer (**global physical address**, see 490, lines 3-8), which is provided with the MAC layer (**local physical address**, see 490, lines 3-8).

Regarding claim 33, Stallings discloses an apparatus at an ATM host (**first node,** see 490, Figure 14.14) comprising AAL5 (ATM Adaptation Layer) and that AAL5 segments MAC frames into a plurality of ATM cells wherein each ATM cell contains virtual channel identifiers (**establishing a VI channel**, see 490, lines 3-8). Stallings also discloses an end system of an ATM–LAN emulation network generates its own MAC frames for broadcast where these MAC frames must be transmitted over a virtual channel (**generating a message to be sent and sending the message using broadcast via VI channels**, see 494, lines 35-44 and lines 3-12, page 495).

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made that the LAN emulation module, AAL5, ATM layer disclosed by Stallings would have provided a method such as broadcasting message, comprising a MAC address, out to other nodes in the LAN to obtain its own ATM address such as the LE_ARP_REQUEST message being broadcast from a LE client as taught in Stallings. The motivation to do so is to obtain ATM addresses (global physical addresses) of a network node by broadcasting its own MAC address to other nodes in the LAN because establishing virtual channel communication between network nodes over ATM LAN relies upon mapping these addresses from one to another.

Response to Arguments

7. Applicant's arguments with respect to claims 1-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KDM
Art Unit 2664

RICKY NGO
PRIMARY EXAMINER